ADDITIONAL OBSERVATIONS ON THE PAIJAN COMPLEX

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In 1974 "The Paiján complex, Pampa de Cupisnique, Peru"[1] was written at the beginning of a project on this culture and area which lasted from February, 1974, to June, 1976. The report was intended to be a summary of our knowledge of some sites in this area after the end of Ossa's research on the Moche Valley [2] and a preliminary survey of these sites. By now, it is unfortunately obsolete or at least very incomplete on many points. The present paper does not intend to describe the many results of this project in Cupisnique but only to complete and/or correct the former on those points where increased knowledge makes such corrections necessary. Special attention will be devoted to the material recovered from a test pit in the quarry site. Thus, paragraphs of the earlier article will be reviewed in their original order and only those points where correction or greater precision is needed will be dealt with. On any other point not touched by this article, the former can be considered confirmed.

Sites and Units

During the 1974-76 project, research was extended so as to cover most of the Cupisnique zone between the Chicama and Jequetepeque valleys. Numerous sites were discovered, most of them at the foot of the hills, in the Pampas de Cupisnique, in the Mócan area, and in several quebradas near the town of Ascope.[3] The Quebrada de Cupisnique was briefly visited. No lithic sites were found on the coastal plain. Variability in the assemblages occurring at the sites visited is of several sorts. On the geographical level, there are three main divisions. One of them is found in the Pampa de los Fósiles site and generally in the Pampas de Cupisnique and in the Mócan area. It was described previously.[4] The second is found around Ascope and shows an abundance of unifacials made of a fine limestone and occasional projectile points of quartzite. The third exists in the Quebrada de Cupisnique and contains neither projectile points nor any hint that bifacial flaking with a soft hammer was known. Unifacials are known but exceedingly rare. The Quebrada de Cupisnique assemblage is not well known due to the considerable difficulties of access to the sites. The Ascope assemblage shows the reverse situation in relation to Pampa de los Fósiles. Projectile points and unifacials are found in the same units, clearly workshops, but unifacials are predominant and projectile points are only occasionally found. There is obviously a question of material, since even in the Pampa de los Fósiles, softer stones were preferred for unifacials. Campsites are difficult to find but when studied show the same assemblage as the "black units" in Pampa de los Fósiles: no projectile points or bifacials, very few unifacials.

There is a second division in the Paiján complex and it is a twofold division: specialized activity units versus general activity units. In both areas the problem is further complicated by the fact that the objects fabricated by the hundreds in the specialized activity units were not used in any significant amount in the general activity units, but elsewhere. Those general activity units which were described as the "black units" of the Pampa de los Fósiles site [5] are clearly campsites.

Typological Observations

Projectile points

Contrary to what was said about the morphology of these pieces, stems with strictly parallel sides are uncommon on the most typical specimens. Rather, it seems that the stem was intended to be constricted in its middle part and slightly expanded at its end, the basal side being generally convex, or more rarely straight, never concave. This shape is similar to the Luz points illustrated by Lanning [6] although the basal part is clearly less expanded in the Paiján points.[7]

The length of the Paiján points is generally between 10 and 15 cm. for the elongated forms, but much longer specimens are known. An outstanding example of a long Paiján point, unfinished though it is, is illustrated here (fig. 1). It was recovered, broken in four fragments, during the exhaustive collection of PV22-13, Unit 5. The fragments were found in an area of approximately 8 square meters. The dimensions of the point are: length, 22 cm.; maximum width, 2.7 cm.; maximum thickness, 1.2 cm. The piece probably first broke in three fragments. Both upper fragments were rejected, but the remaining part was still considered suitable to make a shorter point, and the broken end was retouched. At that stage, the object broke again and was definitively discarded. We must stress that, in spite of the retouch and slight wind erosion, contact is perfect between both halves, and there is no doubt that they are parts of the same piece.

The retouch visible over all the surface of the piece is a kind of violent pressure retouch, rather uncommon in the material studied from this area. It is the only case where we can be sure that pressure retouch entirely covers the piece. It is possible, then, that on some finished specimens where a finer pressure retouch has been used to straighten the edges, this violent pressure retouch has been mistaken for percussion in the few traces that remain on the body. The tip of this point is blunt, and the stem is wider than on finished specimens, but we can say that this piece already had its final shape when it broke. Despite this breaking, the craftsmanship displayed by this piece is astounding.

Bifacials

There is now no doubt that the various kinds of bifacials found in the Paiján sites are intermediate stages in the manufacture of projectile points. Even the occasional use of bifacials in the campsites, for instance as knives, cannot be proven. On the contrary there is an argument against this use. At every occurrence of bifacials in a campsite, chipping debris of the same material can be found in association. We infer that fabrication rather than use of the bifacials is involved. Since Pleistocene megafauna is completely absent from the excavated middens, the question arises of what material was used in making the bifacials. Bone or antler is considered to be the most suitable, but these materials are not found in any site. Some experiments with the core of algarrobo (Prosopis chilensis) have proven that this material is sufficiently hard to provide suitable soft hammers. Zapote wood has also been tried but with less conclusive results.

Common tools

The broad class of "common tools" of the Paiján complex can be defined as completely lacking endscrapers and burins. Sidescrapers are not a very abundant category, contrary to our previous statement.[8] The most abundant category, in all campsites, is that of denticulates. In the Ascope area (Chicama Valley) sidescrapers and particularly "unifacials" are abundant in special workshops for these implements; they are rare anywhere else. The technique of fabrication is the same as with the bifacials and leaves the same kind of chipping debris.

It seems that the occurrence of common tools in a bifacial workshop context in Cupisnique is due to their fabrication at this place rather than to their use. However this opinion is based only on impressions in the field, except for the unifacials which are made with the same technique and so, if discarded, are likely to be found in the same context.

The Quarry Site Test Pit

The earlier description of the quarry site was based on a surface survey.[9] Subsequently, we made a test pit on the top of the rhyolite outcrop and recovered about half a ton of material; we can therefore describe it a little more precisely now.

The test pit was intended to be 2 square meters in area, but the enormous amount of material recovered and the time required to study it made us restrict this size to 1 square meter. The deposit at this point was about 50 cm. thick, plus or minus 15, the bedrock being very irregular here. The deposit consisted of rock debris, mostly intentionally chipped, with a small quantity of eolian sediment. Only lithic material was found.

The lithic waste

A detailed description of the procedures and results of the study would be cumbersome. Its only interest would be for comparison with similar studied material from other quarries.[10] The material was first sieved in a screen with a 5 mm. mesh. Five mm. is thus the absolute lower size limit of what was recovered. Then, all the material untouched by man (rock debris) was eliminated. The remaining artifacts were then divided into several classes: hammerstones, debris, soft hammer flakes, ordinary flakes and tools. Simultaneously, a threefold size subdivision was imposed on both flake classes, but the material pertaining to the "small size" subclasses were left together in a small chip category.[11] The size limits were sought intuitively, and then small samples of objects appearing to be near the limits were measured to establish their length (maximum measurement), width (maximum measurement perpendicular to the length) and thickness (maximum measurement at right angles to the length-width plane). These criteria for measurements were preferred to the classical approach of measuring length on the knapping axis. We are trying to obtain a measure of the gross size of the artifact, itself a function of its volume and ultimately its mass. This procedure is based on the assumption that all other things being equal, namely the rock and the knapping technique, the mass detached by a single blow is a function of the force applied.[12] Our threefold division therefore seeks a gross measure of this force, beyond the size of the artifact produced, as one of the variables operating during the formation of the lithic waste in the quarry. This result could not be achieved with length measured on the axis of the blow, since, for instance, shorter and wider flakes would be systematically underestimated. Of course the other procedure is to be preferred when the shape of the flake, and hence systematic production of certain shapes, is under study.

The samples taken to measure the limits differ in size for each class. The upper limit of the small chips category was measured with 10 objects for the debris and soft hammer flakes and 20 for ordinary flakes. The average measurements are given here in millimeters:

debris: 25.4 x 17.1 x 9.4

soft hammer flakes: 31.5 x 20.2 x 5.1

ordinary flakes: 35.6 x 19.5 x 7.4

The limit obtained for debris was not used in the following procedures.

The lower and upper limits of the medium size class of ordinary flakes were taken with a sample of 3 flakes for each type of butt (totaling 18 for each limit) which permitted us to check that there was no difference according to the type of butt.

lower limit: 30.8 x 20.2 x 7.8

upper limit: 69.7 x 45.6 x 17.4

As can be seen by comparing the limits between small and medium size artifacts, these results vary slightly according to the class being measured. There is a partially conscious compensation between the three dimensions; for instance thicker objects such as debris fall on the limits, other measurements being smaller than if they were thinner objects like soft hammer flakes. We do not think, however, that these differences significantly alter the number of objects falling on each side of the limit. Also, the lower limit of the medium size subclass of ordinary flakes is slightly lower than the upper limit of the small size subclass. This means that there is some indeterminacy in the limits, some objects around them being assigned randomly to the lower or upper subclass. Again this is the result of the artifacts measured being irregular in shape.[13]

The various subclasses isolated by this method differ enormously in quantity. The soft hammer flakes "large size" subclass is empty but conversely the "medium size" subclass of the small chips category and the ordinary flakes are so numerous that direct counting was deemed impractical and samples representing 1/20th of their weight were taken. We must stress however that they are not random samples since none of the accepted random sampling procedures was feasible either. The exact amount of the sample was just separated from the box containing the whole subclass or category. The material was simply taken at the top, and we have no direct evidence that the composition was the same at the bottom. However, we cannot offer any better evaluation for both categories at this moment. Subsequent study of the medium size flakes subclass showed that a small part of the other classes had been left in it. In the final summary of results, evaluations of these residues are added to the directly counted material. The same is done with the small chips category where several subclasses of material are lumped together.

Results of the sampling are given in Tables 1 and 2, and the evaluation of the total assemblage is summarized in Table 3.

Hammerstones

The hammerstone class contains two different kinds of fragments. Most recognizable are fragments of well rounded pebbles. Pebbles of this sort have been used as hammerstones throughout the world by prehistoric man. Their smoothness here calls for a marine origin; river pebbles, which are to be found only in the Chicama and Jequetepeque rivers, are not nearly as rounded and smooth. Another kind of fragments was also classified as hammerstone debris. They generally occur in minute chips and are fragments of a bluish stone (granodiorite?) which can be found in the immediate vicinity of the quarry, whereas the rounded pebbles must have been carried from a distance of at least 15 km. A big lump of this material was also found in the test pit but bears no trace of percussion.

Hammerstones made of this material have been found on the surface of this and other quarries of the same area. They are generally discoidal. This shape can be explained if they are the result of extensive use, this material having a tendency to break and splinter along a single plane. The hammerstone class was only weighed, but not counted. Counting would yield results without meaning because of the heterogeneous nature of this class.

Debris

Debris are clearly knapped rock fragments without any recognizable shape. They are neither flakes nor cores nor tools. This class is clearly a residue in the process of classifying material. It is what is left when all the recognizable material has been assigned to one category or another.

Soft hammer flakes

The members of this class are often called biface thinning flakes. They are generally thinner than most flakes; their profile is curved, the butt is sloping toward the ventral face, the bulb is not very visible and the junction between the butt and the ventral face often shows a lip. We prefer the term soft hammer flakes, since flakes with the same attributes show up in the knapping of unifacial tools (slugs).

Ordinary flakes

The most numerous class comprises all the other flakes. They often exhibit the typical attributes of stone knapped flakes.

Tools found in the test pit

The number of tools found in the test pit is rather low in comparison to the quantity of flakes and debris. It is a constant character of biface fabrication that the number of flakes required to make one object is very high, and moreover the number of bifaces found in the deposit is much lower than the real number made on the spot, since those found are only rejected pieces. We are mentioning only bifaces because there is no significant evidence of anything else. Contrary to previous statements,[14] denticulates do not exist in any significant number; only one object is probably a genuine denticulate. That means that all denticulates seen in the surface survey can be interpreted as first attempts at knapping a bifacial piece from a block by first working extensively on one face before starting on the other. If the piece breaks or appears to have a flaw before the other face is worked, and is consequently discarded, we will have a huge denticulate on a block; and that is always the case. Probably most if not all the denticulates mentioned by Lanning and Patterson from the Chivateros and Oquendo sites are of the same nature.[15] Of course, the morphology of these pieces is not always clear, but generally the tendency toward an elongated foliate piece and a symmetrical lenticular cross section is visible.

The bifacials can be subdivided into several types, but it is quite likely that these types represent only the different kinds of defects that can occur and lead to rejection. We do not possess at present illustrations to show all these types, but we will try, nevertheless, to describe them.

<u>Thick bifacial</u>

A thick bifacial is generally an elongated piece but its section is very thick, and often the maximum thickness approaches the value of the maximum width. An example can be seen in the 1976 article, fig. 2. Very often, the retouch on this kind of bifacial completely covers the piece, not leaving any portion of the original surface of the block.

<u>Thinner bifacial</u>

This type is generally wider, and the width/thickness ratio is larger. But it is by no means a really thin piece. This type tends to have a shorter retouch, leaving untouched a larger portion of the surface of the block on one or even both faces.

<u>Trihedral bifacial</u>

In this type, the cross section of the piece is trihedral and all sides are roughly equal. Consequently, these objects are thick. At least one of the pieces shows traces of heavy wear on its pointed tip, and we suppose it was used as a pick or wedge to detach fragments of the bedrock by blows directed inside the natural clefts. We do not know, however, if this operation was frequent and if trihedral picks were made on purpose. If this is the case, some of the thickest bifacials may be functionally equivalent. Anyway, in the state of our knowledge, most of these pieces are just rejects, and their use on the site was probably occasional.

<u>Flake bifacial</u>

Flake bifacials are just bifacials made on huge flakes probably directly detached from the bedrock. Of course, the thickness ratio is rather favorable to the making of a bifacial object. Often the bifacial retouch is marginal, i.e., made up of small scars leaving nearly all the original surface of the flake untouched. Sometimes the retouch is only unifacial, and probably intended to give the object a symmetrical section.

<u>Regularized Chivateros bifacial</u>

This piece is a medium thick bifacial, but its edges have lost their sinuous appearance through a finer retouch. It is a type intermediate between Chivateros bifacials and the true foliate piece.

<u>Foliate piece</u>

This type is not very frequent, but the existence of a significant number of soft hammer flakes testifies to its occasional manufacture on the spot. It is a foliate piece indistinguishable from the ones found in the workshops. It seems that the piece described and illustrated as fig. 4 in 1976 is an exception rather than a frequent occurrence.

We have classified all these types under the general heading "bifacials," although some of them are unifacial or trihedral. Indeed, they are all part of the same class of objects, obtained with different techniques giving different results but intended for the same goal: fabrication of suitable blanks for the Paiján stemmed points.

Some flakes have been numbered and put aside for further study, since they seemed to bear traces of wear. After a more careful examination of these and the rest of the material where some of these scars occur sporadically, we were able to discard them. There is absolutely no regularity in the occurrence of these retouches and we think that they were produced by natural crushing during the frequent clearing away of debris necessary to reach the bedrock. The results of these operations are still visible on top of the outcrop in small hollows where the rhyolite is still visible at the bottom or on one flank.

This study of the quarry site material of course shows some defects, due to the fact that appropriate random sampling techniques were not used, and so evaluations can be questioned. Some conclusions can be advanced, however, which we hope are reasonably well founded. The study of the waste material has, so far, had little effect on our knowledge of the site and more generally the Paiján complex. An exception is the proportion of soft hammer flakes, which testifies beyond any doubt to the fact that foliate pieces were made at the quarry site itself instead of being carried to the workshops as blanks in the form of Chivateros bifacials. This means that two techniques were employed in succession at this same place, and that some kind of tool kit was necessary, one obvious item being a wooden hammer. Of course there was a substantial advantage in reducing the weight carried from the quarry to the workshop and increasing the number of pieces that one man was able to take with him. This test pit also showed that a local material was used for hammerstones, in spite of its flaws and roughness, and that occasional bifaces served as picks or wedges in extracting large lumps of material.

In addition, the tool assemblage yields more data usable in a comparison with the Chivateros assemblages. However these data must be viewed within a context also comprising the other features of the site. Lanning and Patterson recognized the nature of the Chivateros site,[16] but did not think of the consequences of this nature for the meaning of the Chivateros complex. We have clearly indicated that the Pampa de los Fósiles quarry is an inhospitable place to live, and that its only documented function is as a source of material for lithic implements. Denticulates exist in the campsites but they are never made of the only stone present at the quarry site. The only implements made of this particular stone are of the bifacial sort. It follows then that rejected tools found in the quarry site must show technical relationships with their finished or more elaborate counterparts in the lithic workshops; they are either bifacials or forms that were intended to be transformed into bifacials. If no activity other than knapping stone was carried on at the quarry site, then the only other artifacts found there other than waste material would be tools for extracting stone or making the bifacials. Such implements are clearly represented here by hammerstones and occasional picks. All the other implements can be interpreted as bifacials or forms clearly intended to be transformed into true bifacials, because some of the attributes show deliberate choice of suitable blanks (e.g., huge flakes with a foliate shape, sometimes marginally retouched to be more regular) or clear modification of the original block in order to facilitate further work toward a bifacial form. In this category fall all the possible denticulates that we have seen. A good percentage of them are bifacial denticulates, as Patterson has remarked.[17] True denticulates in the Paiján assemblages are never bifacially knapped. All the unifacial denticulates in the quarry are made on tabular or even irregular blocks on which a series of blows has been struck in order to give a foliate or oval shape and to thin down the piece. Each blow produces a bulb whose negative scar makes a notch on the edge. This repetition of blows necessarily produces a denticulated piece, but the notches are generally wide and shallow, very unlike true denticulates.

This leads us to the question of cores, since Lanning has recognized cores and especially "Levallois-like and pseudo-Levallois cores," in the Chivateros assemblages.[18] There is not one core in the Pampa de los Fósiles quarry site assemblage. We suggest that what Lanning mistook for cores are just more massive bifacials. The pseudo-Levallois core, illustrated by Lanning,[19] is actually a very clear bifacial. The Levallois technique is widely known, and precisely defined, in Old World Early and Middle Palaeolithic assemblages, but its occurrence in the New World would be a major discovery, and authors of such discoveries should be urged to publish an accurate description of their finds and their context.[20] Moreover, Levallois cores are specifically made and prepared for fabrication of Levallois flakes, and these are mentioned nowhere.

Other Results

Of course, the results which have been just described were not the only ones of this project. Several surface campsites and workshops were exhaustively recorded and collected and are currently being analyzed in terms of their artifact content and distribution. Prominent features of the campsites are concentrations of pebble sized stones and grinding slabs.

For some unknown reason, several campsites not particularly rich in artifacts possess a substantial midden about 20 cm. thick from the surface. The most important in this respect are PV22-12, Unit 7 and PV22-13, Unit 1. The faunal material is roughly similar in both and contains, in decreasing order of importance: landsnails, fishes, lizards, some remains of the desert fox (Dusicyon sechurae) and a single fragment of scapula from a cervid, probably Odocoileus virginianus.[21] A detailed study of this fauna is still to be done. However, the complete absence of Pleistocene megafauna and the relative importance of marine products is remarkable. In contrast with the later coastal preceramic associations, fish and not shellfish form the bulk of these marine products. All this raises of course the question of the use of the ever present and seemingly important item, the Paiján projectile point, which has always been judged as particularly adapted for hunting large terrestrial mammals.

Radiocarbon determinations on charcoal and landsnails have been obtained from several middens and an adult burial discovered in another campsite (PV22-13, Unit 2). The oldest determination was yielded by charcoal associated with the burial: GIF 3781(1976), 10,200 ± 180 B.P. One of the most interesting middens, PV22-13, Unit 1, yielded two determinations, one on charcoal: GIF 4161(1977), 9,810 ± 180 B.P., the other on landsnails GIF 4163(1977), 7,740 ± 150 B.P. Although the ages on snails are slightly younger, they support the early dates published by Paul Ossa from the Moche Valley.[22] The results point to the antiquity of the Paiján complex and suggest that the use of marine products in coastal Peru is older than previously thought. This fact may have an influence on our understanding of the process which led to the adoption of marine resource exploitation in coastal Peru, as it is described for instance by Osborn.[23] Also, if all the early cultures now known in Peru have a single origin, this origin must be considerably older, since by 10,000 B.P. they were already so differentiated as to have almost nothing in common.

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NOTES

[1]Chauchat, 1976.

[2]Ossa and Moseley, 1972; Ossa, 1973.

[3]I should like to emphasize that in Mócan the o and not the a is accented. This pronunciation, which can be observed in the Chicama Valley, is probably the original Muchik pronunciation and deserves to be preserved, the Muchik language being extinct.

[4]Chauchat, 1976.

[5]Chauchat, 1976, p. 86.

[6]Lanning, 1963.

[7]Nearly finished but broken specimens of long Paiján points are illustrated in Chauchat, ms.

[8]Chauchat, 1976, p. 89.

[9]Chauchat, 1976.

[10]Unfortunately, a detailed analysis of the Chivateros lithic waste is not available. However, we can expect more comparative data to result from a similar site in Huarmey (Bonavia, ms.).

[11]In this paper we wish to reserve the name class and subclass for those items listed in the first enumeration. We would call the "small chips" assemblage a category to emphasize by this different term that it is outside the classificatory scheme and only a provisional composite entity made up in the process of study.

[12]By knapping technique we mean here not only the kind of hammer used (stone or wood) but also the angle of the blow relative to the striking platform and the distance from the impact to the edge, all of which are factors affecting the flakes produced. At this stage of research on knapping processes, we do not know if these factors can be isolated on the artifacts. Their variations during the manufacture of artifacts obscure the relationship between the force of the blows and the mass detached by them.

[13]In order to replicate this size classification, we suggest that a reverse procedure be followed, first forming a good sample of artifacts measured as being on the limit, then separating the material as accurately as possible by visual comparison with this sample. Finally, half the measured sample is assigned to the lower subclass and half to the upper one. Further control of conformity to the limit can be sought by taking other samples visually close to the limit in both subclasses and measuring them.

[14]Chauchat, 1976.

[15]Lanning and Patterson, 1967.

[16]For instance, "The site seems to have been used as a quarry and workshop but not as a campsite." (Lanning and Patterson, 1967, p. 46)

[17]Patterson, 1967, p. 148: "...large denticulates which were made by bifacially flaking the edge of a tabular fragment."

[18]Lanning, 1970, p. 98.

[19]Lanning, 1970, fig. 23e.

[20]The Levallois technique has been defined from Acheulian sites

near Paris. Its most remote occurrence, spatially as well as chronologically, has recently been described in Australia by Dortch and Bordes (1977).

[21]From a cursory examination by Prof. Robert Hoffstetter, whose help is acknowledged here.

[22]Ossa and Moseley, 1972, p. 15, note 9.

[23]Osborn, 1977.

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TABLE 1

Medium Size Ordinary Flakes Sampling Results

	Results		Evaluations	
	Number	Weight*	Number	Weight
Rock debris residue	10	90	200	1,800
Debris residue	15	175	300	3,500
Soft hammer flakes residue	11	70	220	1,400
Ordinary flakes med. size	469	6,280	9,380	125,600
Total	505	6,615	10,100	132,300

TABLE 2

Small Chips Sampling Results

	Results		Evaluations	
	Number	Weight*	Number	Weight
Rock debris residue	798	435	15,960	8,700
Debris	219	175	4,380	3,500
Soft hammer flakes (small size)	203	165	4,060	3,300
Ordinary flakes (small size)	2,994	1,855	59,880	37,100
Total	4,214	2,630	84,280	52,600

*Weights are recorded in grams.

TABLE 3

Summary of Results and Evaluations*

	First measurements		Medium ordinary flakes evaluation		Small chips evaluation		Totals evaluated			
	Number	Weight	Number	Weight	Number	Weight	Number	%	Weight	%
Rock debris		154,390	200	1,800	15,960	8,700			164,890	
Hammerstones		3,155							3,155	
Debris	1,022	63,710	300	3,500	4,380	3,500	5,702	7.01	70,710	19.79
Soft hammer flakes, small size					4,060	3,300	4,060	4.99	3,300	.92
Soft hammer flakes, medium size	877	5,400	220	1,400			1,097	1.34	6,800	1.90
Ordinary flakes, small size					59,880	37,100	59,880	73.65	37,100	10.38
Ordinary flakes, medium size			9,380	125,600			9,380	11.53	125,600	35.16
Ordinary flakes, large size	815	81,970					815	1.00	81,970	22.95
Tools and other numbered pieces	224	32,935					224	.27	32,935	9.22
Ordinary flakes, medium size		132,410								
Small chips		52,520								

*Weights are recorded in grams.

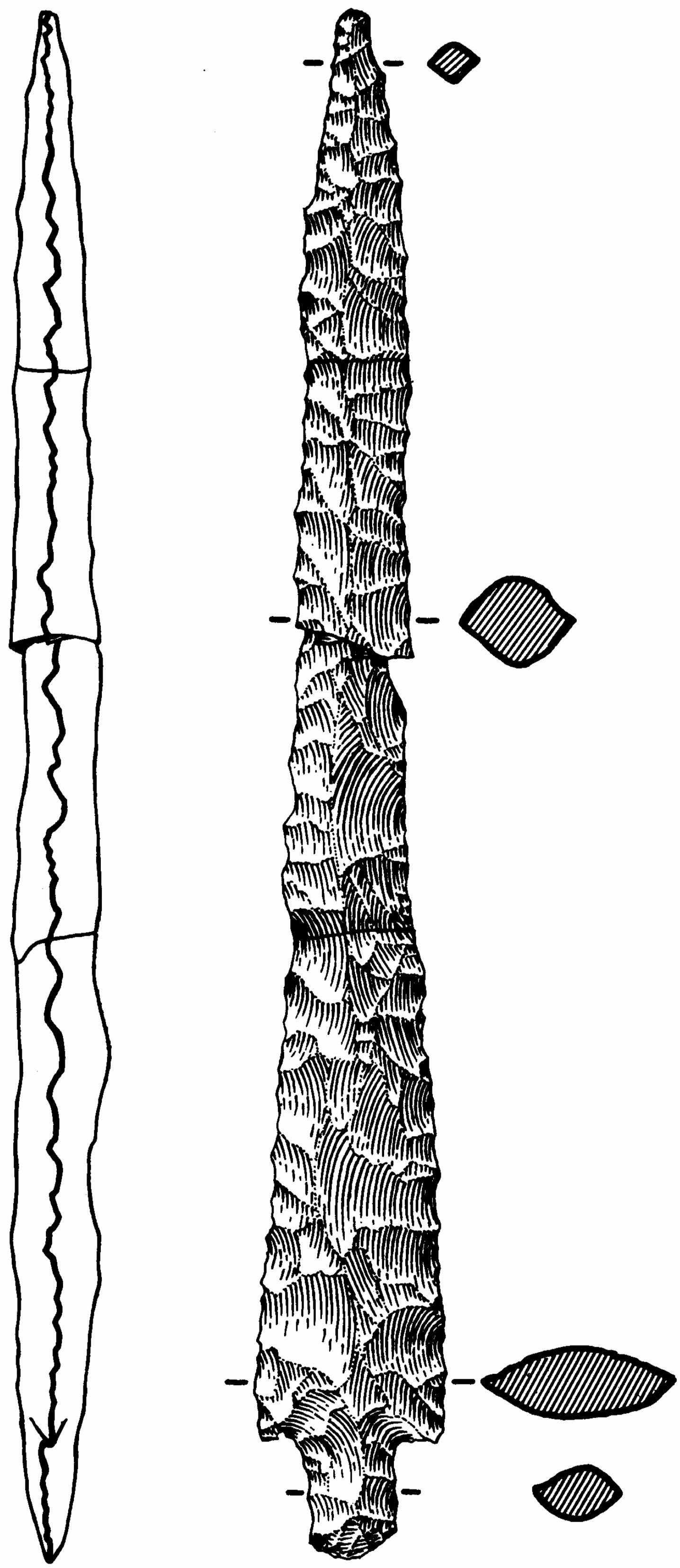

Plate X. Fig. 1, unfinished Paiján point from PV22-13, Unit 5; yellow rhyolite; from stem to tip, fragment nos. 111, 253, 193, 201.